the amenities of London, but from the point of view of university policy it has nothing to commend it. If the south side of the river were chosen, nothing whatever would be achieved beyond the possible erection of a fine building for the university offices. No concentration of teaching institutions could possibly take place there, and, consequently, no university quarter could be created. The establishment of a university quarter is of the essence of the matter.

The speech of the Minister for Education at the Birkbeck College on December 10 further strengthens the view that the Government is in earnest in carrying through this important educational reform. The Minister dealt on that occasion with the recommendation of the Royal Commission for the establishment of an evening constituent university college by the development and re-organisation of the Birkbeck College. With this proposal we are in full sympathy.

Considerable care will be required in dealing with the question of the continuation of the external degree. Signs are not wanting to indicate that some members of the external party conceive that their future would lie in some kind of alliance with those institutions that are not accepted as constituent colleges. Such a device would merely set up a sort of second, and inferior, internal side. The only justification for the continuance of the external degree is that it should be truly and genuinely *external*. Every care must be taken in the efforts that are being made to secure agreement not to destroy the well-thought-out proposals of the commission. No one would think of instituting an external side at the present time; it exists and appeals, apparently, to a large number of people. If it is to be continued, it should be as a purely external and impartial examining board, unconnected with any particular educational institution.

NOTES.

THE President of the Board of Education has promoted Mr. G. W. Lamplugh, F.R.S., to the post of assistant director of the Geological Survey of Great Britain, and Mr. T. C. Cantrill to that of district geologist, the appointments to take effect on January 6, 1914.

WE notice with much regret the announcement of the death on December 15, at thirty-eight years of age, of Dr. P. V. Bevan, professor of physics at the Royal Holloway College, and formerly demonstrator in physics in the Cavendish Laboratory, Cambridge.

DR. R. R. GATES has received from the Royal College of Science, South Kensington, the Huxley gold medal and prize for research in biology.

A REUTER message from Melbourne on December 15 states that the steamer *Pacifique*, which has arrived at Noumea, reports that the volcano in Ambrym Island, one of the New Hebrides, has for many days been in active eruption. On December 6 six new craters were formed on the west coast, and on the following day Mount Minnie collapsed in the centre.

THE Board of Agriculture and Fisheries is engaged in an inquiry, through its horticulture branch, into the failure of fruit-trees to set properly through insufficient pollination. The Board will be glad to be put in communication with the occupier of any orchard of five acres and upward who has reason to believe that his trees are bearing less than the normal crop over a series of years. Fruit-growers who are planting new orchards are also invited to communicate with the Board.

THE Italian Meteorological Society has decided to arrange an international congress to be held in Venice in September next. Prominence is to be given to the discussion of problems in connection with the higher atmosphere, and there are to be sections concerned particularly with climatology, aërology, and pure and maritime meteorology. The price of a member's ticket is to be 10 lire, and special railway facilities are to be offered to those attending the congress. All inquiries and applications should be addressed to the general secretary, Barene Emile D. Henning O'Carrel, director of the Patriarchal Observatory in Venice.

AT a meeting of the executive committee of the British Science Guild held on December 9, it was announced that a permanent paid secretary had been appointed. It was resolved to support the movement which is being taken to induce the British Government to be represented officially at the San Francisco Exposition of 1915. Lord Sydenham, Sir Francis Laking, Sir John Cockburn, and others were added to the medical committee, and it was decided that the subject of reference to the Royal Commission of which Lord Sydenham is chairman should be considered by the medical committee. The subject of the charges made by the Postmaster-General to persons using the wireless time-signals sent out from the Eiffel Tower in Paris has been considered by the committee on the synchronisation of clocks, and it was resolved to approach the Government upon the subject.

BY the regulations for the protection of wild birds and mammals in Egypt, referred to by Sir H. H. Johnston at the end of his article in last week's NATURE, the following kinds of birds useful to agriculture are not allowed to be shot, captured, destroyed, exposed for sale, sold, or purchased:—Egrets, larks, pipits, wagtails, warblers, wheatears, flycatchers, orioles, bee-eaters, hoopoes, green plovers, spur-winged plovers, and winged plovers. Permission to collect or keep any of these birds for scientific purposes rests with the discretion of the Minister of Public Works. All shooting is forbidden on Lake Menzala, and gazelles are protected in certain districts. Governors of cities and Mudirs of provinces have the right to refuse to issue game licences, should they see fit to do so, and to make regulations within the limits of their jurisdiction concerning close seasons, reserves, the kinds of animals that may be shot, and special conditions. The virtual effect of the proclamation is that henceforth the killing of any bird but a hawk, kite, or crow is illegal throughout the Khediviate. It is most satisfactory to note that the Egyptian Government protects by these regulations not only the birds of Egypt, but also the rarer mammals. Its example should at once be followed in British India, in British Guiana, and in British Honduras.

MR. HUGH PHILLIPS, The Manor House, Hitchin, Hertfordshire, stated in *The Times* of December 4 that Newton's house in St. Martin's Street, W.C., was being taken down carefully, after every detail of its construction had been noted and a plan of the structure made by a firm of London architects, with the view of re-erecting the house elsewhere at some future date. In reply to an inquiry, he informs us that at present he has not been successful in finding anyone who will help him to re-erect the house. He says:—"It would be necessary to spend about 10,000*l.* to rebuild and endow it as a museum, and this sum would pay for its upkeep, and its interest would leave a small annual purchasing fund for the acquisition of relics of Sir Isaac Newton and the other inhabitants of the house."

THE Russian Supplement of *The Times* for December 15 contains an account of M. Vilkitski's exploration with the ice-breakers *Taimyr* and *Vaigatz*. On the outward voyage, as the vessels were sailing westwards, a new island some miles in circumference was discovered south-east of New Siberia. Nothing was seen of Sannikof Land. About thirty nautical miles north-east of Cape Cheliuskin the expedition found a new island, free of ice, lying along the parallel. Its eastern end was seven miles broad. Thirty miles from the eastern point of this island land was again sighted on September 3, and the explorers reached the shore at lat. 80° 4′ N., and long. 97° 12′ E. They raised the Russian flag and gave to the newly discovered land the name of the Emperor Nicholas II. It is of volcanic origin, is lofty, and contains extensive glaciers. The coast was then traced north-westwards for a distance of twenty miles up to lat. 80° N., long. 96° E., when further progress was stopped by compact ice. On the way back the expedition called at Bennett Island, raised a monument to Baron von Toll, and took on board his collections, weighing 242 lb. The same publication reports the discovery of prehistoric remains on the shores of Lake Baikal, opposite Olkhon Island. Here M. Petri found eleven successive abodes of primitive man. Flint implements occurred in the lowest layer, and in the higher pottery, with designs becoming more artistic towards the upper levels.

A PROVISIONAL committee, formed of representatives of the Illuminating Engineering Society, the Institution of Electrical Engineers, the Institution of Gas Engineers, and the National Physical Laboratory, held a meeting on November 29 at which arrangements were made for the formation of a National Illumination Committee, to be constituted according to the statutes of the International Illumination Commission, with the primary object of affiliating Great Britain to that commission. The provisional committee recommended that the National Committee should consist of five representatives of each of the three technical societies, and two representatives of the National Physical Laboratory. This recommendation has been adopted, and the following have been nominated as members of the committee:—By the Illuminating Engineering Society: Mr. Leon Gaster, Mr. F. W. Goodenough, Prof. Silvanus P. Thompson, and Mr. A. P. Trotter (this society has not yet nominated its fifth representative); by the Institution of Electrical Engineers: Mr. F. Bailey, Mr. W. Duddell, Mr. K. Edgcumbe, Mr. Haydn Harrison, and Prof. J. T. Morris; by the Institution of Gas Engineers: Mr. E. Allen, Mr. J. Bond, Mr. W. J. A. Butterfield, Dr. H. G. Colman, and Mr. H. Watson; and by the National Physical Laboratory: Dr. R. T. Glazebrook, C.B., and Mr. C. C. Paterson. The first meeting of this National Committee took place on December 2, when the following were chosen as officers:—*Chairman*, Mr. E. Allen; *Vice-Chairmen*, Mr. W. Duddell and Mr. A. P. Trotter; *Honorary Secretary and Treasurer*, Mr. W. J. A. Butterfield. Great Britain is entitled to two delegates on the executive committee of the International Illumination Commission, and Dr. H. G. Colman and Mr. W. Duddell were accordingly appointed by the committee as the delegates from this country.

MR. MARTIN JOHN SUTTON, who died on Sunday, December 14, in his sixty-fourth year, was for many years the head of the seed establishment of Messrs. Sutton and Sons, Reading. He was a man of great energy and sound judgment; he had strong convictions and possessed the courage of them. Despite his long connection with the Royal Agricultural Society, on the council of which he served for nearly twenty-five years, he opposed strenuously the proposal to substitute a fixed show at Park Royal for the perambulating show which had done such fine service for agriculture. The event justified his opposition and approved his foresight. Notwithstanding the imperative claims of his business—claims which he never ignored—Mr. Sutton found time to take a prominent part in the agricultural, educational, and religious life of the country, as well as the civic life of his native town. Soon after the establishment of the college at Reading he became and remained a member of the council of that institution. He watched its growth with interest, and helped it with generous gifts, but not a few of those engaged in research in Reading count the kindly help and wise counsel which he bestowed so unstintingly among the greater of his gifts to the college. Like his co-partners and his successors, Mr. Martin John Sutton was willing always to place the vast resources of the Reading house and trial grounds at the disposal of those engaged in the investigation of plants and their uses. Mr. Sutton published several important papers on scientific subjects, and his volume on "Permanent and Temporary Pastures," which is a standard work, shows the great amount of exact and strictly scientific knowledge which may be amassed by men primarily engaged in business, and leads the merely scientific man to regret that this knowledge is not more often put into general circulation.

CAN any evidence be found of a change in the climate of Europe during the last thousand years before the Christian era? This question is discussed in the *Naturwissenschaftliche Wochenschrift* (No. 44, pp. 689–93) by Mr. Ernst H. L. Krause. It has been prompted by the attempt of Sernander and others to prove that the last marked post-glacial change in the climate of Europe, when the mean annual temperature was about 5° C. lower than now, set in about 500 B.C. This era witnessed the Persian invasion of Greece, the return of the Jews from captivity, and some other national movements, which often are consequences of changes in the productiveness of a region. But contemporary writers, in their geographical descriptions, ought to afford some evidence of so considerable a variation of temperature, and on this point Herr Krause states the result of his investigations. Beginning with Homer, whose age probably corresponds with that of the best bronze work in the north (in which Sernander holds that the climate of Stockholm was dry and warm), he finds nothing to imply any difference in the eastern Mediterranean from its present mean temperature. Hesiod's writings (perhaps a century later) afford no hint of any alteration in the seasons, yet they deal with these and their relation to agriculture. Between his days and those of Aristotle, the temperature of Sweden must have fallen five degrees, yet the writings of the latter, though dealing with natural history, afford no sign of such a change. Theophrastus, Aristotle's pupil, writes on botany without giving any hint of such an occurrence. Herr Krause therefore concludes that this hypothesis has no historical basis, and that any slight alteration, if such there be, can be otherwise explained.

WE have received a copy of an article by Mr. E. Heller, published in the Smithsonian Miscellaneous Collections, vol. lxi., No. 1, on the northern, or Lado, race of the white rhinoceros (*Rhinoceros simus cottoni*), based on the large series of specimens obtained in the Lado Enclave during the Roosevelt expedition. The author believes that there really is good reason for the name "white" bestowed on the southern race of the species by the Boers. Full details of the distinctive characters of the skull and teeth are given in the article, of which a full summary will be found in *The Field* of November 15.

To *The American Museum Journal* for November Dr. W. D. Matthew contributes an interesting notice of the vertebrate remains found in the well-known asphalt-springs of Rancho-la-Brea, California, which formed during the later part of the Tertiary period a veritable death-trap for the fauna of the adjacent country. Even now, when the springs are comparatively inactive, the animal that sets its foot on the apparently sound but really treacherous ground is as good as lost, but in the Pleistocene matters were ten times worse. Remains of more than fifty species of birds have been identified, and there were probably at least as many mammals. "Wolves, lions [?=pumas], and sabre-toothed tigers, eagles, and vultures are the most common of the remains found; next to them stand the larger Herbivora, bisons, horses, ground-sloths, and larger ruminants and wading-birds; while remains of smaller quadrupeds and perching or ground-birds are comparatively rare. This is a fact of grim significance, for it indicates that the larger quadrupeds, venturing out upon the seemingly solid surface, and caught in the asphalt, served as a bait for animals and birds of prey, luring them from all the country round about, and enticing them within the treacherous clutch of the trap; these in their turn falling victims, served to attract others of their kind."

THE latest issue (part 3 of vol. viii.) of Records of the Indian Museum is entirely occupied by reports on the zoological collections made by Mr. S. W. Kemp, assistant-superintendent of the museum, in the course of the punitive expedition against the Abors in 1911–12. One of the most interesting of Mr. Kemp's discoveries in the Abor country—of a species of Peripatus—is not, however, here described. Most of the reports are merely lists of species with exact records of times and places of capture; but several of them are of wider interest. Mr. Ekendranath Ghosh contributes an excellent and well-illustrated paper on the anatomy of slugs of the genera Atopos and Prisma. Mr. B. L. Chandhuri, who describes the fishes, brings an old controversy regarding McClelland's *Barbus spilopholus* to a satisfactory conclusion. And Mr. Kemp, in an interesting account of the river crabs and prawns, reiterates the extraordinary difficulty of dealing with the Potamonidæ in approved systematic fashion. The beautiful plates by A. C. Chowdhary and S. C. Mondul are a prominent feature of the volume.

THAT much-investigated animal, Amphioxus, still continues to provide material for elaborate anatomical memoirs, and will probably continue to do so for a considerable time. It is certainly very desirable that our knowledge of this most important type, which stands so near to what must have been the origin of the vertebrate series, should be as complete as possible, and two recently published memoirs set an admirable example of thoroughness in dealing with special systems of organs. In the first part of a memoir entitled "Untersuchungen über das Gefässsystem der Fische" (*Mitteilungen aus der Zoologischen Station zu Neapel,* Bd. 21, No. 4, 1913), B. Mozejko demonstrates the existence in Amphioxus of an elaborate subcutaneous blood-vascular system. The other paper referred to is Miss H. L. Kutchin's "Studies on the Peripheral Nervous System of Amphioxus" (Proc. American Academy of Arts and Sciences, vol. xlix., No. 10, 1913), in which the author describes, with great elaboration, the beautiful results obtained by *intra vitam* staining of the peripheral nerves with methylene blue. Both memoirs are admirably illustrated, and in both the amount of detail observed as the result of very skilful technical manipulation is highly remarkable.

AN important further contribution to the series of "Studies in Indian Tobaccos" has been published by Gabrielle L. C. Howard, in the Memoirs of the Department of Agriculture in India (vol. vi., No. 3). The author points out that though most of the varieties of tobacco at present grown in India give large yields and are therefore very profitable, the cured leaf produced from them is usually of very poor quality, and is coarse and deficient in texture, flavour, and aroma, hence only available for Indian consumption, and bringing a low price. Improvements in quality of tobacco may be obtained (1) by the discovery of new cultivation methods ensuring a larger yield and a better quality of leaf; (2) by the introduction of improved methods of curing; (3) by the growth of superior kinds. The present paper deals with the third aspect of the question, the immediate problem being the production of a good cigarette tobacco, and details are given of the extensive experiments which have been made in the attempt to build up, by hybridisation, new kinds of tobacco suited to Indian conditions of growth, and possessing the qualities necessary to obtain a better price. The author has made a thorough investigation of inheritance in tobacco, with special reference to the morphological characters which are of economic importance, namely those concerning the habit of the plant and the leaf, but points out that it will probably take some years to obtain a complete knowledge of the subject, which has proved far more complicated than was at first supposed. The paper is illustrated by numerous plates.

The valuable series of reports issued in connection with the Clare Island Survey is now approaching completion. We have just received a copy of the latest issue, No. 64 of the series. This deals with the Foraminifera, and the authors—E. Heron-Allen and A. Earland—are to be complimented on the exhaustive character of their report, which is illustrated on a most liberal scale. Besides being the longest report yet issued in connection with the survey, it is the largest single contribution to the literature of the British Rhizopoda since the publication of Williamson's monograph in 1858, and pending the issue of the new monograph on which the authors are now engaged, the Clare Island report should prove a useful handbook to workers in this order. No fewer than 299 species and varieties are recorded from thirty-seven shore sands and dredgings made in the Clare Island area, a surprising number in view of the general uniformity of depth and bottom conditions reported. Fourteen species and varieties new to science are figured and described in the report, which also records thirty-two other forms for the first time in Great Britain in the recent condition. Many of them are already known in Britain as fossils. Among other outstanding features of the report we notice with pleasure an exhaustive and up-to-date bibliography and an analysis of the important genus Discorbina, which is illustrated by a diagram of the affinities of the principal species. The publication of similar analyses as regards other genera would be of permanent advantage to the science.

The United States Department of Agriculture has sent us the first number of the *Journal of Agricultural Research*, a periodical which will partly supersede the bulletins and circulars hitherto issued by the various bureaus and offices of the Department. The new journal—a large octavo—is well printed and illustrated, affording a worthy channel for the publication of valuable researches. The first number contains three papers. Mr. W. T. Swingle describes *Citrus ichangensis*, a new species from south-western China, which bears a fruit known as the "Ichang lemon"; it is believed that the plant is hardy and might be advantageously introduced into North America. Mr. B. H. Ransom describes in detail *Taenia ovis* (Cobbold), hitherto known only in the cysticercus stage from sheep. The adult tapeworm, now discovered in the dog, is compared with *T. marginata*, and other allied forms. The concluding paper, by F. M. Webster and T. H. Parks, deals with *Agromyza pusilla*, Meigen, the maggot of which mines in the leaves of clovers and many other plants, both in Europe and America.

In the monthly chart of the Indian Ocean issued by the Meteorological Office for December some very interesting notes are given relating to the aurora in both hemispheres, selected from reports contained in ships' logs and other sources. Among the latter some valuable observations by Dr. C. Chree are especially noteworthy. Among these he mentions that in the north the latitude of maximum frequency is believed to vary from 55° in long. 60° W., to fully 75° in long. 90° E.; aurora is seen at least five times as often in the north of Scotland as in the south of England. There seems to be a fairly well-marked eleven year period, closely connected with the sun-spot period. The phenomenon is generally considered to be caused by electric currents in the atmosphere, but opinions differ widely as to the origin of these currents. Some of the best-known recent theories are quoted.

In the Proceedings of the Cambridge Philosophical Society (xvii., 3, 1913) Prof. A. C. Dixon applies integration by parts to several well-known trigonometric expansions in powers of the sine of an angle, and he is thus able to write down the remainders after any number of terms.

In reading a review in the Bulletin of the American Mathematical Society (xix., 10) of Dr. Gerhard Kowalewski's recent Calculus, we find quoted some interesting French verses from which, by counting the letters of the words, the ratio of the circumference to the diameter may be written down to thirty decimals. They are as follows:—

> "Que j'aime à faire apprendre un nombre utile aux sages!
> Immortel Archimède artiste ingénieur
> Qui de ton jugement peut priser la valeur!
> Pour moi ton problème eut de pareils avantages."

It is much easier to remember these verses than the numbers, derived from counting the letters, namely—

3·141592653589793238462643383279.

A separate copy has reached us of Prof. Millikan's paper on the elementary electric charge and the Avogadro constant which appeared in *The Physical Review* for August. It deals with an improved series of observations of the atomic charge of electricity by the method of falling oil drops. The improvements consist in a better optical system for observing the rates of fall of the drops, an arrangement for working in air at different pressures not exceeding atmospheric, a better method of eliminating convection in the air, and the use of a more trustworthy value of the viscosity of air. The author also examines the correctness of the assumptions: that the viscosity effect is uninfluenced by the oil drops being charged electrically, that the drops are spheres, and that their density is the same as that of the oil in bulk. Prof. Millikan's final value for the atomic charge of electricity is $4·774 \times 10^{-10}$ electrostatic units, the probable error being 1 in 500. From this value of the charge the author calculates the following constants: number of molecules per gram molecule, $6·062 \times 10^{23}$; number of gas molecules per cubic centimetre at normal temperature and pressure, $2·705 \times 10^{19}$; kinetic energy translation of a molecule at 0° C., $5·621 \times 10^{-4}$ ergs; coefficient of the absolute temperature in the expression for the energy at any temperature, $2·058 \times 10^{-16}$; coefficient of the logarithm in the expression for the entropy according to Boltzmann, $1·372 \times 10^{-16}$; mass of the hydrogen atom, $1·662 \times 10^{-24} g$; Planck's "quantum" of energy, $6·620 \times 10^{-27}$ ergs; constant of the Wien displacement law, 1·447.

AT a meeting of the Alchemical Society on December 12 Prof. Herbert Chatley, of Tangshan Engineering College, North China, read a paper dealing with alchemy in China. Views similar to those of the medieval alchemists of Europe had been current, Prof. Chatley said, in China since 500 B.C. or even earlier. The Chinese alchemists regarded gold as the perfect substance, and believed in the possibility of transmuting base metals thereinto. They also agreed with European alchemists in employing bizarre symbols in their writings, in using mercury as the basis in attempting to prepare the philosopher's stone, in believing in the slow natural development of gold from other metals, and in postulating a sexual generation for all things. Many interesting particulars concerning this last tenet of the Chinese alchemists, the doctrine of Yin and Yang, were given, as well as others respecting their views concerning the elixir of life, in the possibility of obtaining which they firmly believed.

Engineering for December 12 contains an illustrated description of the Hamburg-American Co.'s T.S.S. *Konigin Luise,* which is fitted with Föttinger's hydraulic transformer for reducing speed between the turbine and propeller shafts. Sir John H. Biles attended the trials of this vessel, and his report is reproduced in our contemporary. Of special interest in the report is a complete table of comparison of the results for this ship and those for the *Caesarea* (turbine direct-driven) and for the *Normannia* (turbine mechanical-gear). At full power, the steam used per shaft-horse-power per hour, excluding auxiliaries, is 15·1, 12·2, and 12 lb., for the *Caesarea, Normannia,* and *Konigin Luise* respectively; the coal consumption per shaft-horse-power per hour for all purposes, stated in the same order of vessels, is 1·72, 1·34, and 1·31 lb. A special claim for the Föttinger transformer is ease in manœuvring; this claim is fully maintained in Sir J. Biles's report. Thus, in one experiment the engines were running at about 430 starboard and 410 port. In three seconds from delivery of the order the engines were stopped; after an interval of some seconds they were put to full speed astern, and in four seconds from the time the valve was opened the speed was 370 revolutions per minute. The complete time required to stop the ship was 1 minute 17 seconds, and she stopped in about a length and a half. It may be added that the total orders in hand for Föttingen transformers make an aggregate of 245,000 shaft-horse-power, including a 20,000 shaft-horse-power liner, two cruisers of 45,000 and 30,000, and several destroyers, each of 25,000 shaft-horse-power.

WE have received a copy of the first number of a new monthly Italian journal devoted to the automobile, under the title, *H. P.* It is excellently printed, copiously illustrated, and contains interesting articles of technical and general interest. Amongst these may be noted a description of the "Fiat" works at Turin, and an article on rubber culture and manufacture. At the present moment no similar journal exists in Italy, and the new venture will doubtless fill a real want.

MESSRS. G. ROUTLEDGE AND SONS, LTD., will publish in January a "Handbook of Photomicrography," by H. Lloyd Hind and W. Brough Randles.

MANY old and rare works on mathematics, physics, chemistry, and kindred subjects, including a large collection of works by Newton and de Morgan, are comprised in a catalogue just issued by Messrs. H. Sotheran and Co., 140 Strand, W.C. A number of copies of Newton's "Principia" is included in the list, and we notice particularly a copy of the first edition of that immortal work offered at the price of eighteen guineas.

MESSRS. J. AND A. CHURCHILL are about to publish the following new books and new editions:—"A Manual for Masons," by Prof. J. A. van der Kloes, revised by A. B. Searle; "Modern Steel Analysis," by J. A. Pickard; "The Story of Plant Life in the British Isles," by A. R. Horwood; "Materia Medica, Pharmacy, Pharmacology, and Therapeutics," by Dr. W. Hale White, thirteenth edition; "Elementary Practical Chemistry," part i., by Dr. Frank Clowes and J. Bernard Coleman, sixth edition; "The Medical Directory, 1914."

OUR ASTRONOMICAL COLUMN.

A REFRACTION ACTING RADIALLY FROM THE SUN.—In the expression for the variation of latitude, a term exists which is independent of the position of the observing station and which has a periodic character. M. L. Courvoisier has suggested that either the sun has an atmosphere which extends to very great distances or that the æther is denser nearer the sun, causing a small refraction in the light of stars, and thus producing this periodic variation in their positions. M. L. Courvoisier's paper, entitled "Ueber systematische Abweichungen der Sternpositionen im Sinne einer jährlichen Refraction" (*K. Sternwarte,* Berlin, No. 15), indicated that many series of observations pointed towards the existence of this refraction varying in amount with the angular separation, according to a formula which he deduced. His observations included a number of stars at different distances, both in right ascension and declination from the sun. The amount of this refraction near the sun he derived from observations of Venus near upper culmination between the years 1858 and 1909. Mr. F. E. Ross points out a correction to Courvoisier's